

Glan Llyn Development Proposed Local Centre

Validation Report
St. Modwen Developments

December 2014

ATKINS

Plan Design Enable

Notice

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Document history

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Client signoff

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1. Introduction

Atkins Limited (Atkins) were commissioned by St. Modwen Developments Ltd (SMD) to prepare a validation report presenting the results of the remedial works and plot preparation completed to date within the area of the proposed Local Centre at the Glan Llyn Development (herein referred to as 'the site'). The Local Centre comprises a number of commercial premises, retail units and community buildings as shown on Drawing 5111373-DWG-EG-0161. The aim of this report is to provide information to show that the conditions described in Geo-Environmental Report (Ref.1), the remedial/ reclamation works carried out under the observation of Atkins, achieve the requirements of the agreed remediation and reclamation strategy prepared for the site (Ref. 2).

This report will present the following:

- Roles and responsibilities of parties involved with remedial works;
- A summary of background information;
- A summary of remedial works undertaken; and
- A summary of validation results relating to the proposed redevelopment of this area as predominantly commercial premises with some residential flats.

This report presents the results of remediation and validation of in-situ soils and imported material to produce a platform suitable for the proposed end use. Validation of additional imported soils used in the final development plot was carried out prior to backfilling works.

This document will form a submission under **Planning Conditions 27 and 28** of the Outline Planning Permission for the site, referenced 06/0471.

1.1. Roles and Responsibilities

Roles and responsibilities for the site remediation/ reclamation works are outlined in the table below:

Name of Party	Role and Responsibilities
St Modwen Developments	Client/ Site Owner
Atkins Limited	Environmental Consultants/ Client Representative/ Supervisor during Environmental/ Remedial Works
Hawk Contracts Limited	Principal Contractor during Remediation/ Reclamation Phase of Redevelopment

1.2. Sources of Information

The following principal sources of information are relevant to the works at the site and reference has been made to them in preparing this report:

1. Atkins – Local Centre, Glan Llyn. Geo-environmental Interpretive Report. Dated November 2014 (Ref 1).
2. Atkins – Glan Lyn Local Centre. Remediation and Reclamation Strategy Report (5111373-LLA-OUT-074)-. Dated March 2014 (Ref 2).
3. IOM – Assessment of Asbestos Contamination at Former Llanwern Steelworks Site, Newport, Wales Report, Dated February 2014 (Ref. 3).

2. Background Information

2.1. Site Location and Description

The site forms part of the wider Glan Llyn Development which is being constructed on the former Llanwern Steelworks site in Newport, South Wales. The site is located on the southern boundary of the wider Glan Llyn Development bordering the Queensway immediately east of the Phase 1 residential area, approximately 3km to the east of Newport City Centre. The location of the site is shown on Drawing 5111373-LLA-DWG-EG-0209.

2.2. Historical Site Use

The wider site of the former Llanwern Steelworks predominantly comprised undeveloped marshy, boggy ground until the site was developed in the latter half of the 1950's as a steelworks. The steelworks was subsequently closed in 2001 with demolition taking place in 2004.

The Local Centre is located the southern part of the former ore stock yard which comprised a number of travelling booms and conveyors moving material to the crushers located to the west (Drawing 5111373-LLA-DWG-EG-094a). A number of these historical features remain within the phase including the concrete rails for the booms and concrete slabs which were part of the ore reclaim system.

2.3. Proposed Redevelopment

The proposed end use of the Local Centre comprises a mix of retail (including a food store, coffee shop and public house), community services (including a community centre, doctor's surgery, library and a police station) and some residential apartments located above some retail stores. The development will include associated areas of landscaping, hardstanding (including car parking) and roadways.

2.4. Ground Conditions

Made Ground was excavated until the top of the natural Tidal Clays were encountered. The Made Ground was removed for segregation and stockpiling off site with the excavation backfilled using pre validated materials suitable for the proposed end use. Full details of the reclamation/remediation and ground conditions of the site are included in Geo-environmental Interpretive Report (Ref 1) and the Remediation and Reclamation Strategy Report (Ref 2).

2.5. Preliminary Conceptual Site Model

The Preliminary Conceptual Site Model (PCSM), produced prior to the reclamation works, identified a number of potential sources of contamination, pathways and receptors for the site. The PCSM is summarised below.

'Sources of contamination identified on the site are largely associated with existing Made Ground and historical activities undertaken on-site, including a layer of slag/fused slag which was used to raise the ground levels. Based upon the findings of the ground investigation undertaken to date the primary contaminants of concerns are likely to include heavy metals and metalloids, elevated (alkaline) pH, individual polyaromatic hydrocarbons (PAHs) including potentially carcinogenic PAHs such as benzo(a)pyrene and total petroleum hydrocarbons (TPHs).

The Local Centre will comprise a number of large and small retail units with various community buildings. A limited number of residential units (without garden space) above the smaller retail units are currently proposed. The screening criteria for the Local Centre has been based upon a commercial end-use. The potential receptors are considered to include ground and construction workers during the proposed redevelopment of the site, residents, future site users and adjacent

site users (residential and commercial use). Additional potential receptors include, controlled waters (Secondary B Aquifer) and surrounding surface water features.

In accordance with the above assessment, Atkins Soil Screening Values (SSVs) for a 'commercial end use' have been adopted for the purpose of validating the Site.'

3. Reclamation Works and Plot Preparation

3.1. Introduction

The reclamation and plot preparation works were completed in a number of phases between January and September 2014. The site was turned over by mechanical excavator until the natural geology was proven with all Made Ground being removed from the site for segregation, assessment and stockpiling. The reclamation works included the removal of remnant structures (to 2m below ground level), slag and fused slag. Suitable fill material for the proposed end use was used to return the plot to a pre-development formation level of approximately 5.9mAOD.

- Excavation of the Made Ground including fused slag, iron ore, lump ravelings (40% iron ore), concrete and removal of remnant foundations to 2m below ground level, January 2014 to March 2014 (Northern half of plot) April 2014 – September 2014 (Southern half of plot).
- Area surveyed and plot backfilled with suitable material, February 2014 (Northern section)
- Area surveyed and plot backfilled with suitable material, April 2014 – September 2014 (Southern section).

3.2. Reclamation Works

The Made Ground was removed from Site with material segregated and stockpiled for further assessment. The surface of the natural geology was surveyed prior to backfill. Relict foundations encountered within the Site. Concrete rails formerly used as conveyors for materials were broken out and removed. Piles were exposed, surveyed and broken out/cut-off at natural ground level. The extent of the excavations and the locations of the remnant foundations are shown on Drawing 5111373-DWG-EG-155. Photographs of the reclamation works and subsequent backfill are shown in Appendix B.

Selected photographs taken showing the excavation to natural geology, exposure of the remnant foundations and the clean material backfill are presented in Appendix B.

The volume of material removed was approximately 30,000m³ which was segregated (approximate percentages of the total volume in brackets) in to the following stockpiles (see drawing 5111373/DWG/058):

- Fused slag & mixed slag with general fill (75% stockpiled for assessment & possible treatment)
- Substantially slag free Made Ground (20% for chemical assessment prior to reuse)
- Iron Ore & lump ravelings (5% stockpiled for recycling)

3.3. Materials Management

The management of site won materials and imported materials at Llanwern is being undertaken in accordance with the voluntary CL:AIRE Code of Practice (CoP) 'The Definition of Waste: Development Industry Code of Practice', September 2008.

A site wide Materials Management Plan (MMP) has been drafted but following changes to the regulations Atkins' is currently awaiting guidance from Natural Resources Wales (Atkins report 5111373/LLA/RPT/077). This report will provide information regarding the location, tracking and assessment of all stockpiles within the site in accordance with the requirements of a CoP approach to materials management.

All material was taken to a pre-assigned area located to the east of the Local Centre.

Groundwater Management

During the reclamation works residual perched water encountered within the Made Ground was connected to a surface water drainage system on site that enters the TATA water treatment system prior to discharge under the terms of the industrial discharge consent operated by TATA. The Atkins site technician monitors compliance of the surface water prior to entry into the TATA system.

3.4. Plot Re-profiling Works

Following removal of identified Made Ground, backfilling of the plot was undertaken between February 2014 and September 2014.

Pre reclamation levels across the Local centre area range between 6.0mAOD and 6.2mAOD. The base of excavation levels on surface of the natural geology prior to the start of filling works, are shown on drawing 5111373-DWG EG-155. Photographs showing the various stages of the re-profiling works are included in Appendix B.

The pre-development formation level across the Site is approximately 5.9m AOD.

4. Validation/Verification

4.1. Backfill Material

The base of excavation profile comprised exposed in-situ natural blue clay. Sixty samples from the clean backfill and thirty two samples of the natural clay at the base of excavation were recovered during the reclamation phase and submitted to a MCERTS / UKAS accredited laboratory. Screening of the results against the selected GAC recorded no concentrations of contaminants above the screening value for a commercial end use. The soil screening results for both the natural clay samples and the backfill samples are presented in Appendix A. The locations of the samples collected from the natural clay are shown on drawing 5111373-DWG-EG-210. A total of 60 samples have been tested to date. This represents a testing frequency of 1 sample per 500m³ of fill.

The table below provides a summary of the backfill material used within the Local Centre.

Table 4.1 Summary of Backfill Material Provenance

Stockpile Reference <i>(sample ref in Lab report)</i>	Source	Description	Sample Numbers	Lab Report
SP27 (LIBERTY)	Liberty Grove	Dark Brown Sandy Clay	1-2	LLA034
SP27	Liberty Grove	Dark Brown Sandy Clay	4-5	LLA087
SP8	Caerphilly primary school	Dark Brown Sandy Loam	1-3	LLA024
SP1	Trevethin,	Dark Brown Sandy Clay Loam	1-2	LLA024
SP2	Caerphilly,	Dark Brown silt Loam	1-2	LLA024a/25
SP14	Newport City Vision P3	Dark Brown Sandy Loam	1-5	LLA023
SP21	Lagan/Cardiff Bay	Dark Brown Sandy Clay Loam	1-4	LLA023
SP6	Creosyceiloge school	Dark Brown Loamy Sand	4-6	LLA087
SPE2 (SPEZ)	Existing site material	Grey/ brown sandy Gravel	1-3	LLA060
SPA	Existing site material	Red/brown cobbly gravelly Clay	1-3	LLA032
SP35 (MATHERN)	Mathern, green field	Brown slightly clayey sandy Gravel (coarse sub-angular mudstone).	1-3	LLA066
SP33 (BED)	Bedwas, green field	Light brown Cobbly slightly gravelly sandy CLAY	1-3	LLA067
SPCG (SPDC)	Existing site material	Crushed concrete and sandstone	1-2, 1-9*	LLA024a/25 LLA075
P2B SF	Existing site material	Light brown loamy sandy Gravel	1-3	LLA071
MaySS (SP28)	Magor brewery subsoil	Dark reddish brown sandy Clay	1-5	LLA049
LC BACKFILL	Existing site material	Dark brown sandy clay Loam	1-3	LLA063
PCLC	Existing site material	Dark brown silty Clay	3-5	LLA078

*Samples numbers SPCG1 & SPCG2 have been duplicated

The fill is deepest in the areas where the blue clay appears to have been compressed by weight exerted from the former ore stockyard along the north eastern boundary of the Local Centre. Spot heights taken at the base of the excavation are shown on Drawing 5111373-DWG-EG-155. In the north eastern half of the local centre, a maximum level of fill approximately 3.5m but the average depth of fill ranges in thickness between 0.5m and 2m.

4.2. Final Levels

The final development platform has been created using site won materials and green field imported soils suitable for a commercial end use. The Site has been completed to pre-development formation level approximately 5.9mAOD. The formation level is lower than the original ground levels across the Local Centre to allow for construction materials for the development.

4.3. Updated Conceptual Site Model

Following the completion of the site reclamation, ground investigation and subsequent groundwater monitoring the CSM for the site has been updated and the Site is considered unlikely to pose a risk to current human health, groundwater or surface water receptors from the screened compounds / elements on site (Ref. 1).

The gas monitoring completed indicates that the site characteristic situation for carbon dioxide and methane is CS2 (Characteristic Situation 2) when calculated assuming a maximum flow of 0.8 l/hr, which is described as 'low' risk.

5. Post Reclamation Development Requirements

5.1. Introduction

The following section provides post remediation requirements, recommendations and information relating to potential development constraints remaining at the site.

5.2. Potential Constraints to Redevelopment

Remnant foundations were identified and recorded within the plot during the reclamation. These included piles and concrete supports for the iron ore conveyor belt, as shown on the constraints plan (Drawing 5111373-DWG-EG-094a). The concrete structures were removed and the piles were surveyed and cut off at 2m below ground level.

5.3. Gas Protective Measures

The concentrations of soil borne gases across the Local Centre are considered representative of CS2 and are considered to pose a low risk to structures and site occupants within the proposed development.

In accordance with this classification, CIRIA C665 suggests the following basic gas and vapour protective measures beneath residential housing.

- Reinforced concrete cast in situ floor slab (suspended, non suspended or raft) with at least 2000g DPM and under floor venting;
- Beam and block or pre-cast concrete and 2000g DPM/reinforced gas membrane and underfloor venting;
- All joints and penetrations to be sealed.

It is required that the exact details of the proposed gas protection system to be installed beneath proposed plots are agreed with the relevant regulatory authorities prior to installation.

5.4. Construction Materials

Construction materials are likely to comprise 0.5m of cover above the existing formation level and should be appropriate for the development which includes roads, car parks, buildings and landscaping areas.

The depth and suitability of cover should be validated by the purchaser and agreed with the local relevant regulator.

5.5. Service Installation

The materials used to backfill the Local Centre has been screened against a commercial end use criteria. Further assessment to check the suitability of the back fill material for service installation is recommended. The UKWIR Report ref 10/WM/03/21 'Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites', 2010) should be consulted together with the observations and results contained within this report to ensure sufficient protection of potable water supplies.

5.6. Seepages and Groundwater

The complete removal of Made Ground above the natural geology indicates that the risk of impact to groundwater from residual sources within soil has been removed.

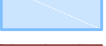
Observations and samples collected from the natural geology indicate that the material is suitable to be retained within the development plot.

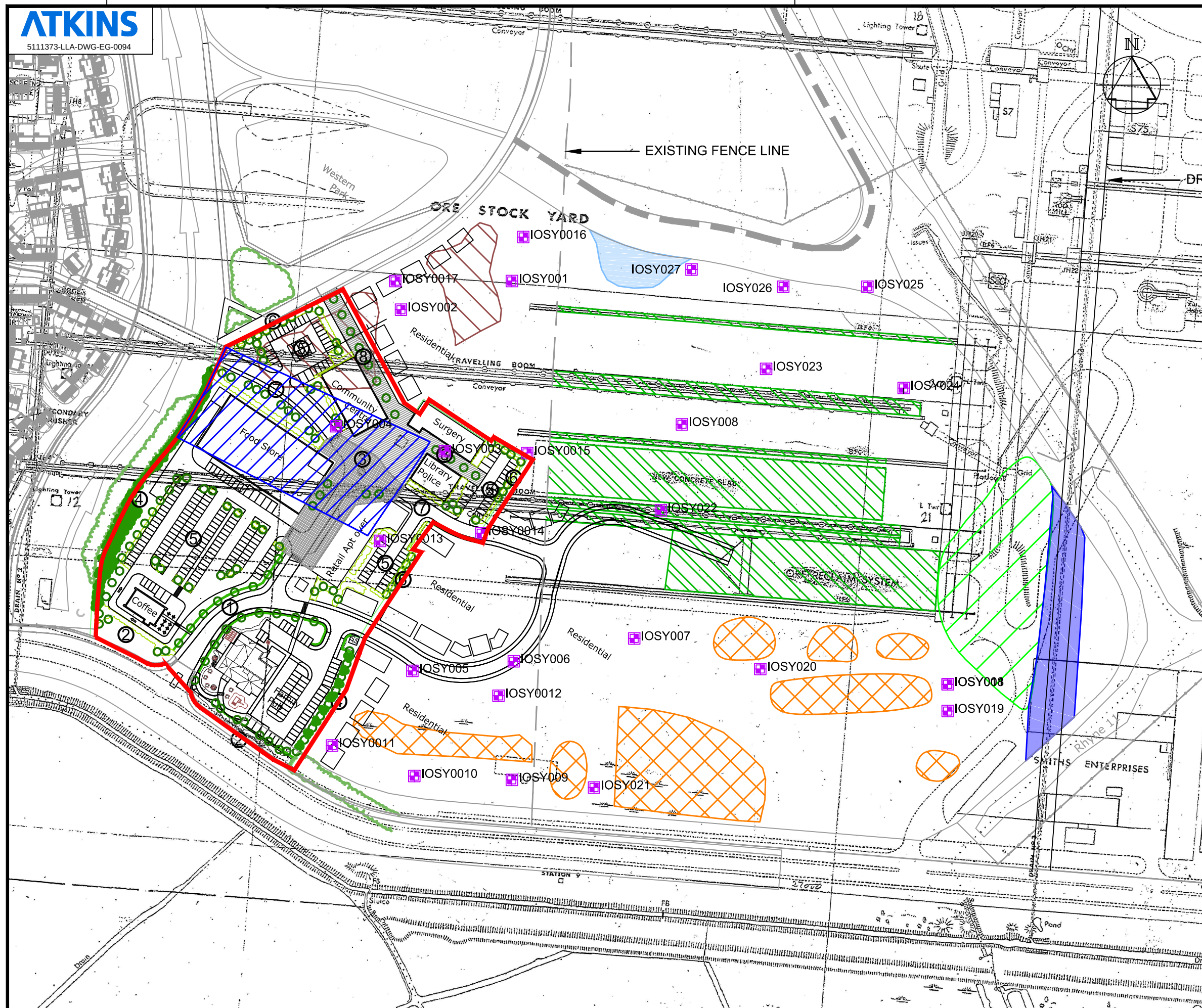
5.7. Aggressive Ground Conditions

Laboratory test results provided by Alcontrol were assessed in accordance with BRE Special Digest 1 (2005 3rd Edition) (Ref. 21). In total eight samples were submitted to the laboratory for water soluble sulphate as SO₄ 2:1 extract from both the backfill and the base of excavation. The results indicate that the water soluble sulphate, as SO₄ 2:1 concentrations, ranged from a minimum of 5.4mg/l to a maximum of 420mg/l with a mean value of 160mg/l. The pH of the groundwater analysed on site ranged from 7.13 to 7.81.

Analysis of these results indicates that the site generally falls within the design sulphate class of DS-1 with an ACEC class of AC-1 for both the Made Ground and Tidal Flat Deposits.

Key

-  Stockpiles
-  Concrete
-  PM Harris compound
-  Concrete crushing operations
-  Drains
-  Standing water
-  Fused slag
-  Preliminary Investigation Trial Pit Locations



B	Site boundary amended	RJ	HM	12.14
A	Local centre revised and historic plan added	AJ	HM	03.14
REVISIONS		Drawn By	Checked By	Date

PURPOSE OF ISSUE	Rev.	Authorised for issue	Date
Atkins Limited Telford Office Cornerstone House Stafford Park 13 Telford TF3 3AZ Tel 01952 201234 Fax 01952 200981			
Birmingham Office The Axis, 10 Holliday Street Birmingham West Midlands B1 1TF Tel 0121 483 5000 Fax 0121 483 5252			

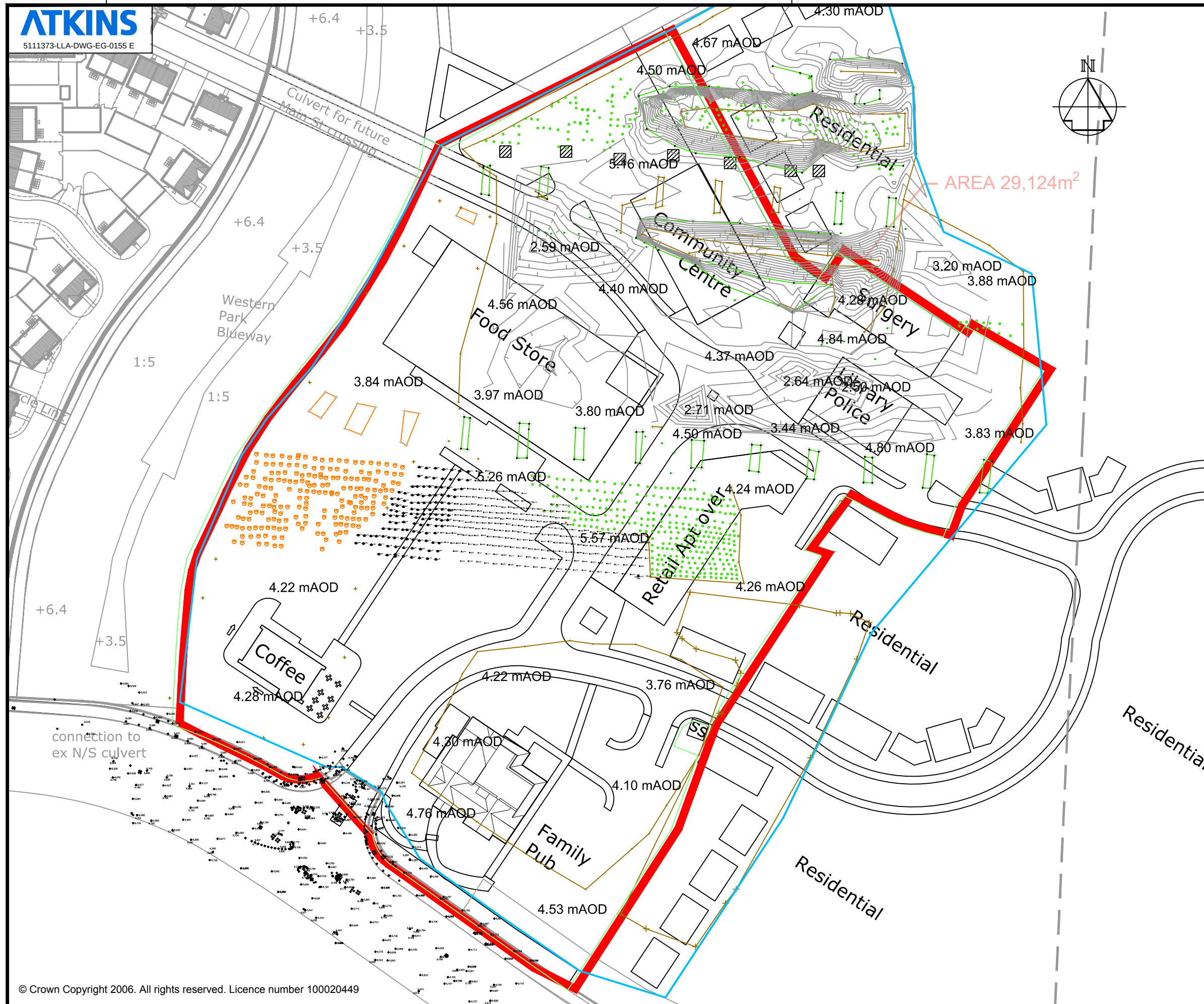
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CLIENT

PROJECT
Llanwern

DRAWING TITLE
Constraints Plan

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DATE 24.09.13	DATE 24.09.13	DATE	DATE
DRAWING NO 5111373-LLA-DWG-EG-0094		SHEET A3	PLOT DATE 19.12.14
REV B			



KEY:

- EXTENT OF LOCAL CENTER NOV 2014
- REMNANT PILES
- □ REMNANT FOUNDATIONS
- EXTENT OF RECLAMATION WORKS TO NATURAL GEOLOGY / SOILS
- 4.60mAOD BASE OF EXCAVATION IN METERS ABOVE ORDINANCE DATA

E	SITE BOUNDARY AMENDED AND ADDITIONAL PILES ADDED	RJ	HM	19/12/14
D	PUB BAND DRAINS ADDED	MJ	AM	30.06.14
C	COFFEE SHOP & PUB BOE CONSTRAINTS ADDED	BS	AM	04/06/14
B	LOCAL CENTRE SURVEY & SAMPLE POINTS ADDED	BS	AM	28/04/14
A	AREAS REVISED	MJ	AM	25/02/14

REVISIONS	Drawn By	Checked By	Date
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PURPOSE OF ISSUE	Rev.	Authorised for issue	Date
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PROJECT
LLANWERN

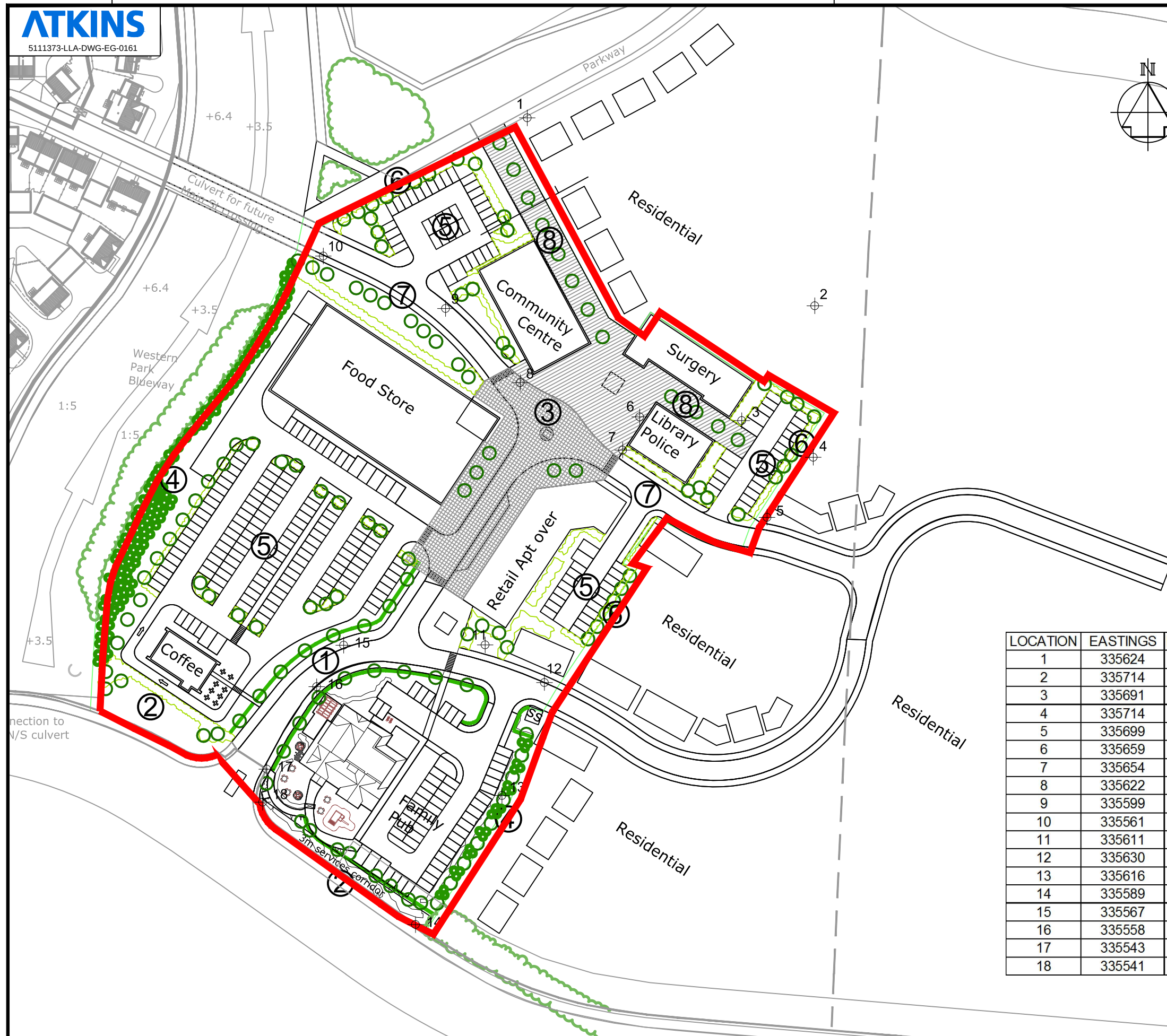
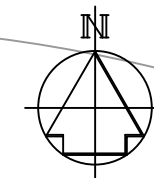
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LOCAL CENTRE WORKS COMPLETED

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0		SHEET A3	PLOT DATE 19.12.14

DRAWING NO 5111373-LLA-DWG-EG-0155	REV E
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KEY

- PHASE BOUNDARY
LOCATION POINT



LOCATION	EASTINGS	NORTHINGS
1	335624	186686
2	335714	186628
3	335691	186592
4	335714	186581
5	335699	186562
6	335659	186593
7	335654	186583
8	335622	186604
9	335599	186627
10	335561	186643
11	335611	186522
12	335630	186511
13	335616	186475
14	335589	186435
15	335567	186522
16	335558	186509
17	335543	186483
18	335541	186473

B	SITE BOUNDARY	RJ	CW	19/12/14
	AMENDED			
REVISIONS	Drawn By	Checked By	Date	

PURPOSE OF ISSUE	Rev.	Authorised for issue	Date
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Atkins Limited

Telford Office
Cornerstone House
Stafford Park 13
Telford TF3 3AZ

Birmingham Office
The Axis, 10 Holliday Street
Birmingham
West Midlands B1 1TF

Tel 01952 201234
Fax 01952 200981

Tel 0121 483 5000
Fax 0121 483 5252

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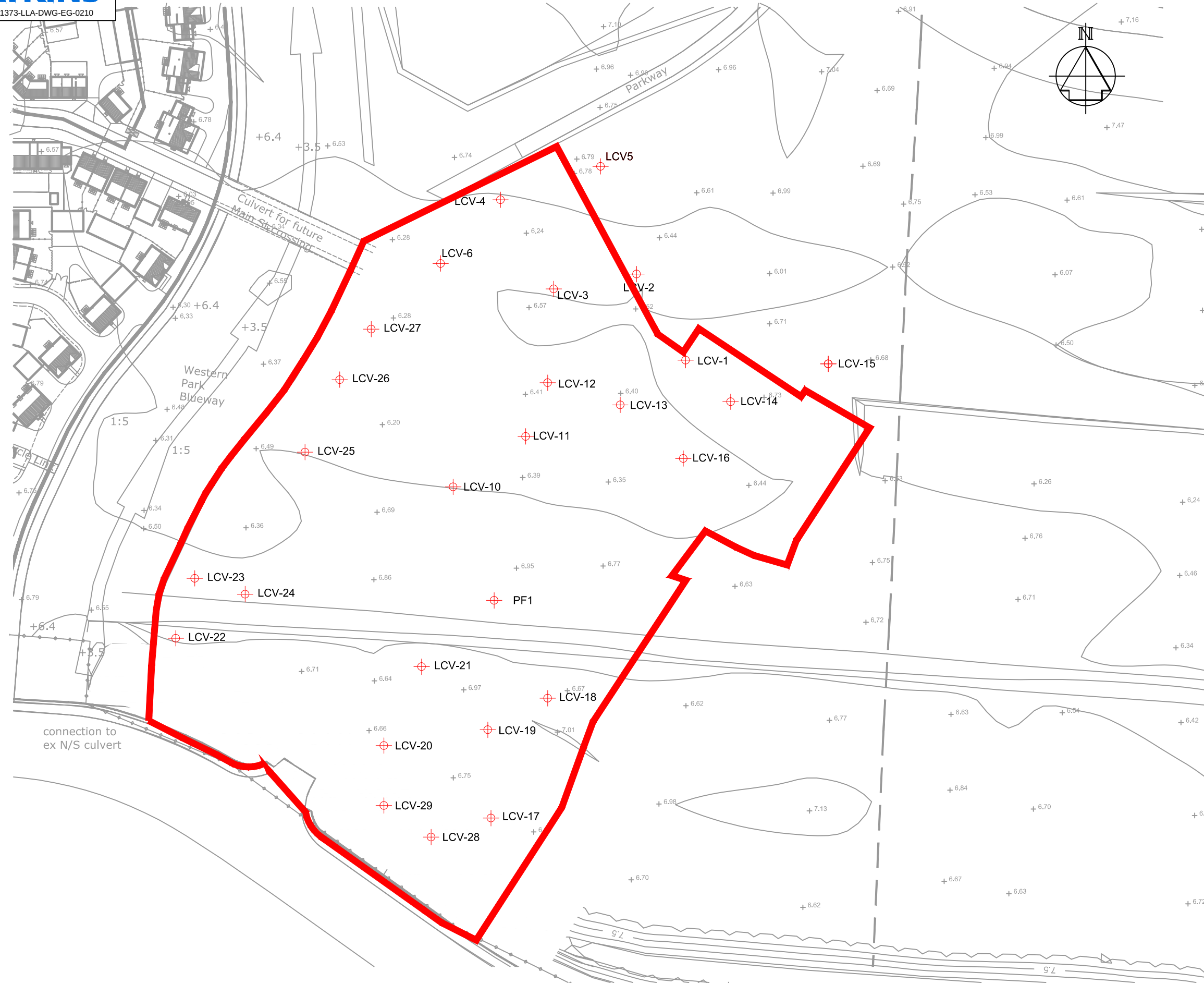
CLIENT

PROJECT
LLANWERN

DRAWING TITLE
PROPOSED LOCAL CENTRE 2014 LAYOUT

SCALES 1:1250	DRAWN MJ	CHECKED AM	CO-ORD CHECK
	DATE 25/02/14	DATE 25/02/14	DATE
		SHEET A3	PLOT DATE 19.12.14

DRAWING NO	REV
5111373-LLA-DWG-EG-0161	B



KEY

- ⊕ LCV-1 VALIDATION LOCATION
- LOCAL CENTRE BOUNDARY
- + 6.31 ORIGINAL GROUND LEVEL

B	SITE BOUNDARY AMENDED	RJ	HM	19/12/14
REVISIONS	Drawn By	Checked By	Date	

PURPOSE OF ISSUE	Rev.	Authorised for issue	Date
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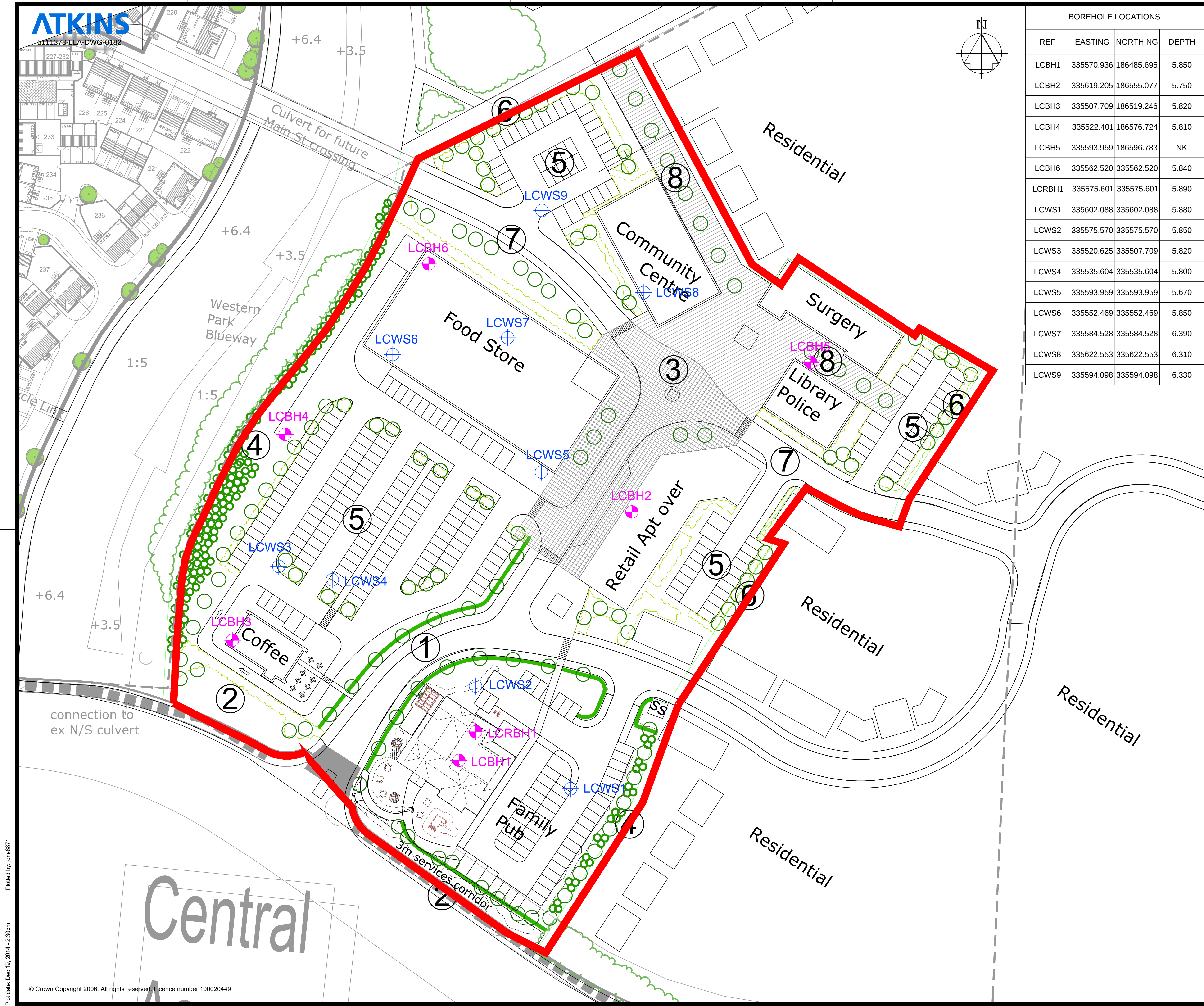
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PROJECT	LLANWERN
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DRAWING TITLE	LOCAL CENTRE VALIDATED LOCATIONS
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SCALES	1:1250	DRAWN	MJ	CHECKED	AM	CO-ORD	CHECK
DATE	16/09/14	DATE	16/09/14	DATE			

0	+	+	+	+	+	SHEET	A3	PLOT DATE	19.12.14
DRAWING NO	5111373-LLA-DWG-EG-0210							REV	B



BOREHOLE LOCATIONS			
REF	EASTING	NORTHING	DEPTH
LCBH1	335570.936	186485.695	5.850
LCBH2	335619.205	186555.077	5.750
LCBH3	335507.709	186519.246	5.820
LCBH4	335522.401	186576.724	5.810
LCBH5	335593.959	186596.783	NK
LCBH6	335562.520	335562.520	5.840
LCRBH1	335575.601	335575.601	5.890
LCWS1	335602.088	335602.088	5.880
LCWS2	335575.570	335575.570	5.850
LCWS3	335520.625	335507.709	5.820
LCWS4	335535.604	335535.604	5.800
LCWS5	335593.959	335593.959	5.670
LCWS6	335552.469	335552.469	5.850
LCWS7	335584.528	335584.528	6.390
LCWS8	335622.553	335622.553	6.310
LCWS9	335594.098	335594.098	6.330

- KEY
- CABLE PERCUSSION BOREHOLE
 - WINDOW SAMPLE BOREHOLE
 - PHASE BOUNDARY

04	SITE BOUNDARY AMENDED	RJ	CW	19/12/14
03	BH's AND LOCATIONS ADDED	MJ	AM	10/10/14
02	LABELS INCLUDED AND LOCATIONS AMENDED	RJ	CW	17/07/14

REVISIONS	Drawn By	Checked By	Date

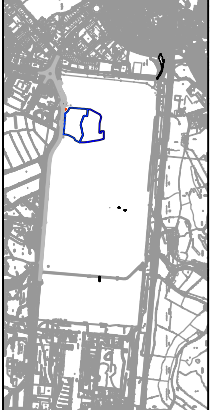
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Birmingham Office The Axis, 10 Holliday Street Birmingham West Midlands B1 1TF Tel 0121 483 5000 Fax 0121 483 5252			
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CLIENT	ST.MODWEN
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PROJECT	LLANWERN
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DRAWING TITLE LOCAL CENTRE GROUND INVESTIGATION PROPOSED EXPLORATORY HOLE LOCATION PLAN			
SCALE 1:500	DRAWN MA	CHECKED MB	CO-ORD CHECK
DATE 17/04/14	DATE 17/04/14	DATE	DATE
0		SHEET A1	PLOT DATE 19.12.14
STATUS	DRAWING NO 5111373-LLA-DWG-0182	REV P04	

Key Plan:



Key:

- Reens and Lakes
- Phase 1 A&B
- Roads, Footways and Cycleways
- Landscaping
- WAG land take for Steelworks Road Phase 1
- RM2 boundary
- Phase 1 A&B boundary
- Existing watercourses
- Existing culverts

IMPORTANT WARNING

The information concerning the location and/or depth of the public utility apparatus is provided for information only. It is not to be relied upon as a guarantee of the location or depth of the apparatus. The contractor is responsible for ensuring that the location and/or depth of the apparatus is confirmed prior to any excavation or other works which may affect the existing services.

DO NOT SCALE. This drawing is to be read in conjunction with all relevant Architects, Engineers and Specialist Manufacturer's drawings and specifications. If in doubt please consult the Engineer.

Drawing Status

WORK IN PROGRESS

ST.MODWEN

Halcrow

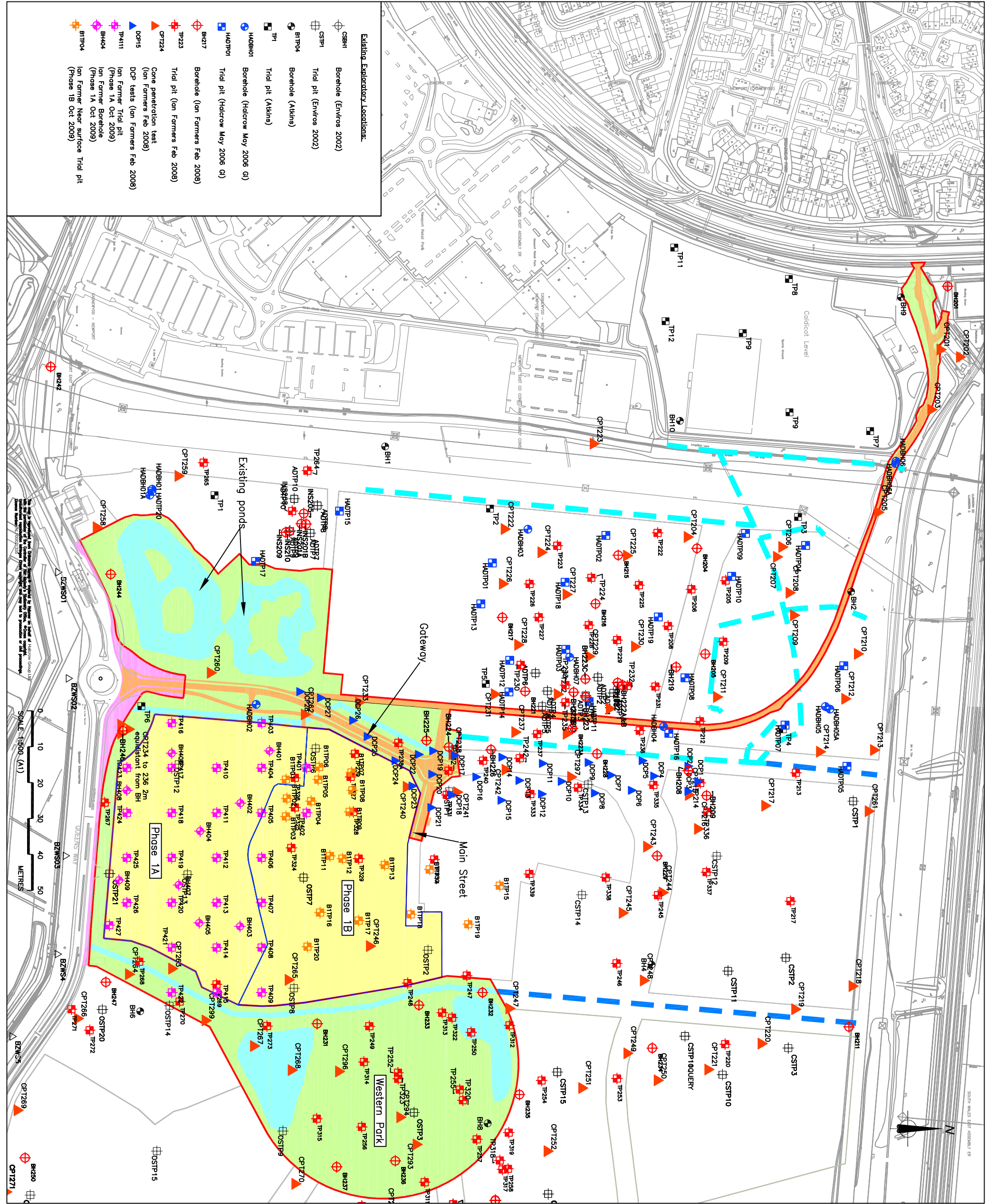
Glan Llyn, Newport

GI WITHIN THE RM
LANDSCAPING AND ROADS

Drawn by: ADW	Date: SEP 2010
Checked by: GB	Date: SEP 2010
Approved by: NLC	Date: SEP 2010
Drawing No.	Revision:
PI/FLRS/SK/P102/067	0

Drawing Scale: 1:500 @ A1

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Appendices

Appendix A. Screening Spreadsheet & Laboratory Certificates

Llanwern	SSV Commercial 1% SOM	SSV Commercial 6% SOM	1000 Unit	27 LIBERTY-1	27 LIBERTY-2	27 SP27-4	27 SP27-5	8 SP8-1	8 SP8-2	8 SP8-3	1 SP1-1	1 SP1-2	2 SP2-1	2 SP2-2	14 SP14-1	14 SP14-2
Lab number																
Asbestos			y/n													
Olfactory Score																
Arsenic	640	640	mg/kg	10.8	10.9	10.6	11.7	8.44	8.06	11.9	15.9	21.3	5.11	10.3	13	17.6
Cadmium	230	230	mg/kg	0.698	0.918	0.496	0.106	1.28	0.659	0.125	0.734	2.14	0.0493	1.27	0.848	0.251
Chromium total	213000	213000	mg/kg	24.1	83.7	72.5	267	17	38.9	37.3	14.4	19.4	33.4	52.4	29.4	30.5
Chromium III	213000	213000	mg/kg													
Chromium VI	330	330	mg/kg													
Copper	3970	109000	mg/kg	28.8	23	33.6	33.5	13	12.3	33.9	39.4	77.7	23.7	30.1	35.6	36.4
Lead	6490	6490	mg/kg	1330	52.5	41.8	42.8	55.4	35.9	106	82.1	109	29.5	191	81.1	100
Mercury	414	410	mg/kg	0.217	<0.14	<0.14	<0.14	<0.14	<0.14	0.151	<0.14	<0.14	<0.14	0.183	0.285	0.216
Nickel	1800	1800	mg/kg	21.3	21.8	25.6	25.6	17.6	18.9	24.4	19.5	31.7	27.8	17.5	21.4	21.9
Selenium	13000	13000	mg/kg	<1	1.13	<1	<1	<1	1.12	<1	2.12	1.9	1.29	2.01	1.28	<1
Vanadium	7530	7530	mg/kg	31.6	58.9	63.7	157	19.1	51.4	27.4	16.1	18	33.3	61.2	35.8	34.6
Zinc	-	-	mg/kg	126	222	145	160	147	135	150	205	235	128	1130	149	185
Naphthalene	8180	22700	mg/kg	0.123	0.285	0.125	0.14	0.0298	0.0211	0.0352	0.0278	0.0379	0.0212	0.083	0.525	0.424
Acenaphthylene	-	-	mg/kg	0.129	0.278	0.362	0.291	0.0188	0.0948	0.0435	0.0168	<0.012	<0.012	0.0317	0.181	0.186
Acenaphthene	109,000	106000	mg/kg	0.0488	0.0505	0.0552	0.0396	<0.008	0.0289	0.0131	<0.008	<0.008	<0.008	<0.008	0.133	0.108
Fluorene	66800	72100	mg/kg	0.114	0.0879	0.0583	0.0633	<0.010	0.0285	0.018	<0.01	<0.01	<0.01	0.0142	0.193	0.225
Phenanthrene	-	-	mg/kg			0.503	0.518									
Anthracene	536000	545000	mg/kg	0.326	0.278	0.284	0.222	0.0188	0.0948	0.0435	<0.016	<0.016	<0.016	0.0456	0.468	1.73
Fluoranthene	73200	72700	mg/kg	2.86	2.37	1.79	1.76	0.177	0.953	0.235	0.0821	0.0469	0.056	0.325	2.4	3.08
Pyrene	54200	54,500	mg/kg	2.14	1.82	1.98	1.76	0.144	0.786	0.19	0.0645	0.0562	0.0482	0.248	1.98	2.55
Benz(a)anthracene	131	142	mg/kg	1.44	1.38	1.52	1.44	0.103	0.667	0.176	0.0494	0.03	0.0258	0.212	1.51	1.89
Chrysene	14000	14300	mg/kg	1.06	1.24	1.83	1.32	0.116	0.71	0.195	0.0415	0.0206	0.0339	0.194	1.38	1.84
Benzo(b)fluoranthene	142	144	mg/kg	1.6	1.81	3.4	2.79	0.166	0.859	0.255	0.0552	0.165	0.0456	0.398	1.67	1.95
Benzo(k)fluoranthene	1430	1440	mg/kg	0.62	0.739	0.968	1.02	0.0593	0.375	0.0913	0.0233	0.0666	0.0223	0.131	0.82	0.812
Benzo(a)pyrene	14.3	14.4	mg/kg	1.41	1.57	2.42	2.43	0.132	0.713	0.164	0.0468	0.154	0.0455	0.268	1.73	1.9
Indeno(1,2,3-cd)pyrene	142	144	mg/kg	0.247	0.277	1.75	1.88	0.0277	0.171	0.0561	<0.023	0.0458	<0.023	0.0752	0.345	0.342
Dibenzo(a,h)anthracene	14.3	14.4	mg/kg	0.837	1	0.487	0.467	0.0881	0.438	0.122	0.0369	0.145	0.0299	0.269	1	1.1
Benzo(g,h,i)perylene	1440	1450	mg/kg	0.948	1.2	2.13	2.27	0.113	0.468	0.153	0.0439	0.185	0.0429	0.292	1.14	1.32
Soil Organic Matter (SOM)	0	3	%													
Soil Organic Matter (SOM)			%													
Aliphatics >C5-C6	-	-	mg/kg	<0.01	<0.01	<0.04	<0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0125	<0.01
Aliphatics >C6-C8	-	-	mg/kg	<0.01	<0.01	<0.04	<0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0205	0.0115
Aliphatics >C8-C10	167,000	170,000	mg/kg	<0.01	<0.01	<0.04	<0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0239	0.0115
Aliphatics >C10-C12	171,000	171,000	mg/kg	<0.01	<0.01	<0.04	<0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0513	0.0288
Aliphatics >C12-C16	171,000	171,000	mg/kg	4.14	4.06	0.738	<0.01	3.63	<0.010	<0.010	<0.010	2.41	4	<0.010	9.16	12.1
Aliphatics >C16-C21	-	-	mg/kg	9.95	6.92	4.64	<0.01	7.13	5.14	0.433	<0.010	2.16	4.21	3.92	28	36.9
Aliphatics >C21-C35	-	-	mg/kg	55.1	33.6	28.9	14.5	17.5	29.1	10.3	1.09	10.5	20.4	36.5	122	145
Aliphatics >C35-C44	-	-	mg/kg													
TPH Aromatic >C5-7	13.10000	95,000.0000	mg/kg	<0.01	<0.01	<0.04	<0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
TPH Aromatic >C7-8	414,000	420,000	mg/kg	<0.01	<0.01	<0.04	<0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
TPH Aromatic >C8-10	58,600	64,100	mg/kg	<0.01	<0.01	<0.04	<0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0251	0.0127
TPH aromatic >C10-C12	68,300	68,300	mg/kg	<0.01	<0.01	<0.04	<0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0342	0.0184
TPH Aromatic >C12-C16	68400	65,600	mg/kg	5.24	8.47	<0.01	1.6	1.71	<0.010	0.214	0.355	2.68	2.61	<0.010	8.41	6.88
TPH Aromatic >C16-C21	28400	28,400	mg/kg	30.5	16.2	5.4	6.3	4.39	6.82	4.74	0.341	3.82	3.98	3.5	34.4	42.5
TPH Aromatic >C21-C35	28400	28,400	mg/kg	98	77.6	52.8	46.1	22.8	57	38	1.9	28.4	17.5	36	161	192
TPH Aromatic >C35-C44	-	-	mg/kg													
Water soluble sulphate as SO4 2:1 extract			g/l													
Souble Sulphate 2:1			mg/kg													

Llanwern	SSV Commercial 1% SOM	SSV Commercial 6% SOM	1000	14	14	14	21	21	21	21	6	6	6	EZ	EZ	EZ	A	A	A
			Unit	1.5	4.81	1.7	12.9	7.67	12.4	11.4	8.78	13.2	12.2	1.49	3.03	2	2	1.58	2.02
Lab number																			
Asbestos			y/n																
Olfactory Score																			
Arsenic	640	640	mg/kg	17.2	14.7	16.6	19.9	12.3	18.2	13.7	13	18	17.3	7.19	12.8	7.9	10.4	9.87	8.99
Cadmium	230	230	mg/kg	1.29	0.833	0.777	0.739	0.99	0.5	0.865	0.363	0.362	0.433	0.776	0.561	0.538	0.834	<0.02	0.408
Chromium total	213000	213000	mg/kg	29.9	31.6	31.5	81.6	20.1	82.8	104	57.1	29.4	25.8	27.1	31.7	40.1	21.6	19.6	24.4
Chromium III	213000	213000	mg/kg																
Chromium VI	330	330	mg/kg																
Copper	3970	109000	mg/kg	44.7	29.2	35.4	32.2	18	36.6	29.6	25	34.5	42.2	9.27	20.2	12.6	29.3	21.3	43.8
Lead	6490	6490	mg/kg	90.8	85.3	83.2	60.9	25.9	56.3	78.6	39	52.4	41.1	11.6	33.3	25	23.2	17.1	25.2
Mercury	414	410	mg/kg	0.189	0.191	0.245	<0.14	0.254	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14
Nickel	1800	1800	mg/kg	24.3	17.3	27.1	20.9	20	22.2	20.1	18.2	20.5	20.9	17.7	23.1	18.6	29.3	26.3	36.7
Selenium	13000	13000	mg/kg	<1	<1	<1	2.07	1.14	2.32	3.09	<1	<1	<1	<1	<1	<1	1.24	<1	3.25
Vanadium	7530	7530	mg/kg	37.6	35	32.2	69.5	20	77.4	220	44.2	31.9	28.3	78	51.6	78.4	28.7	24.5	31.6
Zinc	-	-	mg/kg	258	216	181	127	67	124	90.7	80	104	103	63	106	92.1	82.8	70.4	102
Naphthalene	8180	22700	mg/kg	0.286	0.267	0.389	0.1	0.0768	0.17	0.11	0.104	0.104	0.1	0.0651	0.0605	0.0842	0.0272	0.0219	0.0301
Acenaphthylene	-	-	mg/kg	0.12	0.11	0.195	0.0322	0.0418	0.0673	0.0895	0.0472	0.0222	0.0427	0.0152	<0.012	0.0159	<0.016	0.0371	<0.016
Acenaphthene	109,000	106000	mg/kg	0.123	0.0839	0.148	0.208	0.0257	0.143	0.0354	0.0909	0.0221	0.0305	<8	0.00952	0.00976	<0.008	<0.008	<0.008
Fluorene	66800	72100	mg/kg	0.208	0.127	0.27	0.185	0.0371	0.157	0.0674	0.0949	0.0364	0.058	0.0114	0.0118	<0.01	<0.01	<0.01	<0.01
Phenanthrene	-	-	mg/kg								0.671	0.377	0.352	0.129	0.153	0.155	0.0601	0.0758	0.0571
Anthracene	536000	545000	mg/kg	0.414	0.344	1.23	0.236	0.0835	0.218	0.148	0.159	0.0641	0.0767	0.02	0.0232	0.0269	<0.016	0.0371	<0.016
Fluoranthene	73200	72700	mg/kg	1.84	1.83	3.62	1.56	0.723	1.58	0.943	1.08	0.535	0.707	0.111	0.118	0.184	0.0851	0.272	0.0932
Pyrene	54200	54,500	mg/kg	1.55	1.54	2.84	1.13	0.59	1.18	0.776	0.799	0.432	0.56	0.0904	0.0939	0.179	0.0705	0.226	0.0736
Benz(a)anthracene	131	142	mg/kg	1.15	1.08	2.14	0.994	0.555	1.06	0.689	0.756	0.368	0.622	0.0593	0.0808	0.12	0.0618	0.188	0.0687
Chrysene	14000	14300	mg/kg	1.06	1.12	2.06	1.05	0.502	1.1	0.673	0.714	0.368	0.621	0.0743	0.0816	0.105	0.0521	0.152	0.0588
Benzo(b)fluoranthene	142	144	mg/kg	1.45	1.24	2.32	1.24	0.649	1.53	0.87	0.912	0.555	0.974	0.0843	0.111	0.161	0.0747	0.182	0.0946
Benzo(k)fluoranthene	1430	1440	mg/kg	0.652	0.491	0.968	0.523	0.287	0.662	0.386	0.426	0.235	0.382	0.0353	0.0358	0.0498	0.0356	0.0787	0.0321
Benzo(a)pyrene	14.3	14.4	mg/kg	1.45	1.11	2.01	0.918	0.642	1.28	0.84	0.644	0.383	0.569	0.0536	0.0565	0.0863	0.0691	0.155	0.0586
Indeno(1,2,3-cd)pyrene	142	144	mg/kg	0.286	0.214	0.384	0.18	0.132	0.258	0.189	0.33	0.257	0.305	0.0404	0.0655	0.0873	<0.023	<0.023	<0.023
Dibenzo(a,h)anthracene	14.3	14.4	mg/kg	0.87	0.641	1.15	0.481	0.371	0.776	0.561	0.123	0.0938	0.104	<0.023	<0.023	<0.023	0.0475	0.0807	0.05
Benzo(g,h,i)perylene	1440	1450	mg/kg	1.04	0.797	1.33	0.518	0.407	0.9	0.645	0.353	0.307	0.313	0.0529	0.0561	0.0692	0.0601	0.0935	0.0608
Soil Organic Matter (SOM)	0	3	%																
Soil Organic Matter (SOM)			%																
Aliphatics >C5-C6	-	-	mg/kg	0.0125	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.04	<0.04	<0.04	<0.01	0.0128	0.015	<0.01	<0.01	<0.01
Aliphatics >C6-C8	-	-	mg/kg	0.0182	<0.01	0.0148	<0.01	<0.01	<0.01	0.01	<0.04	<0.04	<0.04	<0.01	0.0232	0.0219	<0.01	<0.01	<0.01
Aliphatics >C8-C10	167,000	170,000	mg/kg	0.0205	<0.01	0.0137	<0.01	<0.01	<0.01	0.01	<0.04	<0.04	<0.04	<0.01	0.0302	0.0403	<0.01	<0.01	<0.01
Aliphatics >C10-C12	171,000	171,000	mg/kg	0.0399	<0.01	0.0308	<0.01	<0.01	<0.01	0.0188	<0.04	<0.04	<0.04	<0.01	0.0708	0.244	<0.01	<0.01	<0.01
Aliphatics >C12-C16	171,000	171,000	mg/kg	14.2	10.3	6.96	9.19	3.45	9.62	4.74	<0.01	<0.01	3.06	1.36	0.774	2.94	6.62	2.53	3.12
Aliphatics >C16-C21	-	-	mg/kg	38	28.7	21.4	13.3	3.09	5.3	5.2	<0.01	<0.01	0.731	4.77	2.06	6.39	6.33	2.44	3.05
Aliphatics >C21-C35	-	-	mg/kg	128	146	100	21.2	11.9	20.5	19.3	4.12	<0.01	8.18	27.4	8.95	67.6	11.1	8.74	19.9
Aliphatics >C35-C44	-	-	mg/kg																
TPH Aromatic >C5-7	13,10000	95,000,0000	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.04	<0.04	<0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
TPH Aromatic >C7-8	414,000	420,000	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.04	<0.04	<0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
TPH Aromatic >C8-10	58,600	64,100	mg/kg	0.0217	<0.01	0.016	<0.01	<0.01	<0.01	0.0125	<0.04	<0.04	<0.04	<0.01	0.0313	0.038	<0.01	<0.01	<0.01
TPH aromatic >C10-C12	68,300	68,300	mg/kg	0.0274	<0.01	0.0205	<0.01	<0.01	<0.01	0.0125	<0.04	<0.04	<0.04	<0.01	0.0464	0.163	<0.01	<0.01	<0.01
TPH Aromatic >C12-C16	68400	65,600	mg/kg	11.8	8.62	6.43	6.68	2.25	9.95	5.02	<0.01	2.76	1.53	0.562	<0.010	0.635	<0.010	2.45	2.49
TPH Aromatic >C16-C21	28400	28,400	mg/kg	37.6	39.4	30.1	17.3	6.09	17.6	21.7	1.75	5.57	3.84	2.36	<0.010	5.05	<0.010	3.33	3.88
TPH Aromatic >C21-C35	28400	28,400	mg/kg	172	196	141	58.6	29.1	73.6	70.8	29.1	39.2	33.2	20.1	4.16	69.5	<0.010	13	14.4
TPH Aromatic >C35-C44	-	-	mg/kg																
Water soluble sulphate as SO4 2:1 extract			g/l																
Souble Sulphate 2:1			mg/kg																

			1000	backfill	backfill	backfill	backfill	backfill	backfill	backfill	backfill	backfill	backfill	backfill	backfill	backfill	backfill	backfill	backfill
Llanwern	SSV Commercial	SSV Commercial																	
	1% SOM	6% SOM	Unit	<0.35	<0.35	<0.35	0.9	0.5	1.86	0.993	1.24	4.12	5.03	2.97	2.48	3.93	4.45	3.79	5.28
Lab number																			
Asbestos			y/n																
Olfactory Score																			
Arsenic	640	640	mg/kg	16.1	28.3	21.1	6.92	6.61	14.5	15.5	15.4	7.29	12.6	11.1	12.9	15.1	6.38	12.8	11
Cadmium	230	230	mg/kg	0.115	0.219	0.114	0.222	0.0841	0.226	2.61	1.46	0.254	0.203	0.37	0.25	0.628	0.191	0.347	0.758
Chromium total	213000	213000	mg/kg	22.8	28.7	26.3	13.5	14.1	28.3	20	21.1	120	68.6	35.6	177	55.9	38.6	34.3	19.8
Chromium III	213000	213000	mg/kg																
Chromium VI	330	330	mg/kg																
Copper	3970	109000	mg/kg	12.5	10.3	15	7.62	8.04	22.6	15.1	16.9	10.9	15.1	4.93	<14	54.2	19.7	29.3	25.9
Lead	6490	6490	mg/kg	13.9	12.4	15.3	13.4	14.3	15.8	95.5	87.5	32	29.7	23.1	40.2	71.4	30	41.9	43.1
Mercury	414	410	mg/kg	0.373	0.336	0.242	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	0.42
Nickel	1800	1800	mg/kg	21.2	30.3	25.9	23.7	23.9	30.5	18.4	19.8	19.6	24.8	8.85	28.1	43.8	24	31.2	28.1
Selenium	13000	13000	mg/kg	<1	<1	<1	<1	<1	<1	1.75	1.82	4.56	<10	2.92	<10	<10	1.45	1.78	1.76
Vanadium	7530	7530	mg/kg	28.2	33.1	31.2	12.3	12.9	19.9	32.7	32.1	152	93.4	63.4	222	48.9	43.8	41.5	29.8
Zinc	-	-	mg/kg	117	144	142	62.6	59.1	67.5	375	305	120	96.6	80.4	106	107	79.2	109	93.9
Naphthalene	8180	22700	mg/kg	<0.009	<0.009	<0.009	<0.09	0.0106	<0.09	0.0109	0.0185	0.256	0.0615	0.414	0.338	0.0338	0.0375	0.0221	0.046
Acenaphthylene	-	-	mg/kg	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	0.0173	0.0158	0.0856	0.0626	0.023	0.0179	0.0231	<12	
Acenaphthene	109,000	106000	mg/kg	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	0.035	0.0145	0.0221	0.0154	<8	<0.0095	<8	<8
Fluorene	66800	72100	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.137	0.0172	0.0519	0.0436	<10	0.014	<10	<10
Phenanthrene	-	-	mg/kg	<0.015	<0.015	<0.015	0.0408	0.0678	0.0889	0.0543	0.0499	1.39	0.155	0.62	0.474	0.119	0.131	0.0905	0.179
Anthracene	536000	545000	mg/kg	<0.016	<0.016	<0.016	<0.016	0.0174	0.0183	<0.016	<0.016	0.452	0.0263	0.163	0.0967	0.0258	0.0282	0.026	0.029
Fluoranthene	73200	72700	mg/kg	<0.17	<0.17	<0.17	0.0881	0.097	0.171	0.113	0.108	2.92	0.187	0.923	0.663	0.231	0.293	0.219	0.373
Pyrene	54200	54,500	mg/kg	<0.015	<0.015	<0.015	0.108	0.0972	0.152	0.0878	0.0922	2.15	0.167	0.751	0.55	0.189	0.246	0.191	0.325
Benz(a)anthracene	131	142	mg/kg	<0.014	<0.014	<0.014	0.0659	0.071	0.0943	0.0669	0.0635	1.72	0.117	<0.014	0.326	0.2	0.241	0.19	0.277
Chrysene	14000	14300	mg/kg	<0.01	<0.01	<0.01	0.06	0.0666	0.0741	0.0575	0.0528	1.76	0.129	0.568	0.34	0.175	0.262	0.156	0.328
Benzo(b)fluoranthene	142	144	mg/kg	<0.015	<0.015	<0.015	0.0765	0.0837	0.0964	0.1	0.0847	2.22	0.158	1.06	0.446	0.345	0.415	0.278	0.504
Benzo(k)fluoranthene	1430	1440	mg/kg	<0.014	<0.014	<0.014	0.0334	0.0314	0.039	0.032	0.0363	0.726	0.0599	0.405	0.171	0.0941	0.114	0.0945	0.146
Benzo(a)pyrene	14.3	14.4	mg/kg	<0.015	<0.015	<0.015	0.0462	0.0811	0.0747	0.0765	0.0785	1.48	0.125	0.475	0.326	0.206	0.257	0.184	0.342
Indeno(1,2,3-cd)pyrene	142	144	mg/kg	<0.018	<0.018	<0.018	<0.023	<0.023	<0.023	<0.023	<0.023	0.323	<0.023	<0.023	0.0611	0.137	0.154	0.12	0.208
Dibenzo(a,h)anthracene	14.3	14.4	mg/kg	<0.023	<0.023	<0.023	0.0471	0.054	0.069	0.0402	0.0417	0.963	0.0774	0.328	0.206	0.0448	0.0546	0.0377	0.0621
Benzo(g,h,i)perylene	1440	1450	mg/kg	<0.024	<0.024	<0.024	0.0319	0.0857	0.0443	0.0459	0.0511	1.05	0.108	0.398	0.259	0.161	0.172	0.138	0.231
Soil Organic Matter (SOM)	0	3	%																
Soil Organic Matter (SOM)			%																
Aliphatics >C5-C6	-	-	mg/kg	<0.01	<0.01	<0.01	0.0134	0.0141	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C6-C8	-	-	mg/kg	<0.01	<0.01	<0.01	0.0196	0.0202	<0.01	<0.01	<0.01	0.0198	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C8-C10	167,000	170,000	mg/kg	<0.01	<0.01	<0.01	0.0278	0.0202	0.0105	<0.01	<0.01	0.0231	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C10-C12	171,000	171,000	mg/kg	<0.01	<0.01	<0.01	0.0598	0.0635	0.0116	<0.01	<0.01	0.0363	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C12-C16	171,000	171,000	mg/kg	8.13	<0.010	<0.010	1.86	<0.010	4.11	2.65	2.42	5.49	0.98	0.562	0.149	0.868	1.08	<0.010	<0.010
Aliphatics >C16-C21	-	-	mg/kg	10.8	<0.010	<0.010	5.11	<0.010	7.77	6.56	5.34	13.2	5.23	3.58	3.02	0.715	0.981	<0.010	<0.010
Aliphatics >C21-C35	-	-	mg/kg	<0.010	<0.010	<0.010	6.22	<0.010	9.58	35.1	26.7	64.9	36.2	23.9	23	15.7	13	7.91	5.87
Aliphatics >C35-C44	-	-	mg/kg																
TPH Aromatic >C5-7	13,10000	95,000,0000	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
TPH Aromatic >C7-8	414,000	420,000	mg/kg	<0.01	<0.01	<0.01	0.0196	0.0141	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
TPH Aromatic >C8-10	58,600	64,100	mg/kg	<0.01	<0.01	<0.01	0.0402	0.0423	<0.01	<0.01	<0.01	0.0209	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
TPH aromatic >C10-C12	68,300	68,300	mg/kg	<0.01	<0.01	<0.01	0.632	<0.010	1.44	<0.01	<0.01	0.0242	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
TPH Aromatic >C12-C16	68400	65,600	mg/kg	3.71	<0.010	<0.010	2.8	<0.010	4.48	2.32	2.11	1.4	<0.010	0.493	0.509	<0.010	0.317	<0.010	<0.010
TPH Aromatic >C16-C21	28400	28,400	mg/kg	3.64	<0.010	<0.010	8.4	<0.010	10.9	6.97	6.19	9.31	1.54	3.64	3.39	<0.010	1.84	1.3	0.806
TPH Aromatic >C21-C35	28400	28,400	mg/kg	<0.010	<0.010	<0.010	2.22	<0.010	3.38	32.2	29.1	46.6	18.2	20.1	28.6	15.5	23.7	16.6	15.5
TPH Aromatic >C35-C44	-	-	mg/kg																
Water soluble suplhate as SO4 2:1 extract			g/l																
Souble Sulphate 2:1			mq/kg																

			1000	backfill	Backfill	Backfill	Backfill	Backfill	Backfill	Backfill	Backfill	Backfill	Backfill	Backfill	Backfill	Backfill	Backfill
Llanwern	SSV Commercial	SSV Commercial		SPCG-9	P2B SF 1	P2B SF 2	P2B SF 3	MaySS-1	MaySS-2	MaySS-3	MaySS-4	MaySS-5	LC Backfill 1	LC Backfill 2	LC Backfill 3	PCLC - 3	PCLC - 4
	1% SOM	6% SOM	Unit	4.59	2.43	1.1	1.25	0.426	0.8	0.472	0.374	<0.35				3.34	5.72
Lab number																	
Asbestos			y/n														
Olfactory Score																	
Arsenic	640	640	mg/kg	18	9.39	9.16	4.74	6.78	5.84	5.75	5.66	6.31	18.5	9.67	9.38	17.2	9.25
Cadmium	230	230	mg/kg	0.422	0.484	0.701	<0.02	<0.02	0.0557	<0.02	<0.02	<0.02	3.07	2.12	2.9	0.37	0.366
Chromium total	213000	213000	mg/kg	40.3	77.5	187	10.5	24.3	23.9	22.8	23.6	25.4	28.9	22.4	29	34.9	27.9
Chromium III	213000	213000	mg/kg														
Chromium VI	330	330	mg/kg														
Copper	3970	109000	mg/kg	37.9	11.7	10.2	3.72	15.3	16.8	14.7	14	16.8	14.4	12.6	15.1	20.6	31.6
Lead	6490	6490	mg/kg	73.1	25.9	36.1	14.5	18.2	21.9	19.5	19.9	20.4	20.8	18.8	24.6	33.6	59.6
Mercury	414	410	mg/kg	<0.14	<0.14	<0.14	0.193	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	0.21	0.188	<0.14	<0.14
Nickel	1800	1800	mg/kg	29.1	18.4	17.8	7.79	25	26.1	24.7	25.2	26.8	27.8	24.8	38.2	30.7	29.6
Selenium	13000	13000	mg/kg	2.27	2.15	5.47	<1	<1	<1	<1	<1	<1	1.79	<1	2.19	3.17	1.48
Vanadium	7530	7530	mg/kg	47.3	142	333	16.7	28.9	25.8	26.9	26.3	28.5	37.2	34	35.9	43.1	40.5
Zinc	-	-	mg/kg	163	83.2	103	58.5	66.2	91.7	68.8	67.3	70.2	80.5	74.2	85.6	122	123
Naphthalene	8180	22700	mg/kg	0.053	0.101	0.0562	0.025	<0.009	0.0167	<0.009	<0.009	<0.009	0.0874	0.0556	0.0947	0.101	0.0632
Acenaphthylene	-	-	mg/kg	0.0366	0.0455	0.0249	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	0.0266	0.0155	0.0201	0.024	0.0255
Acenaphthene	109,000	106000	mg/kg	0.0109	0.0304	0.0358	0.0321	<0.008	<0.008	<0.008	<0.008	0.00956	0.0126	<0.008	0.0159	0.0171	0.0131
Fluorene	66800	72100	mg/kg	0.0158	0.0589	0.088	0.0374	<0.01	<0.01	<0.01	<0.01	<0.01	0.0238	0.0214	0.0195	0.0251	0.0204
Phenanthrene	-	-	mg/kg	0.179	0.342	0.485	0.14	0.0481	0.0688	0.0312	<0.015	0.0593	0.201	0.117	0.216	0.245	0.32
Anthracene	536000	545000	mg/kg	0.0422	0.0968	0.134	0.0798	<0.016	<0.016	<0.016	0.0254	<0.016	0.0467	0.0273	0.0436	0.0529	0.0483
Fluoranthene	73200	72700	mg/kg	0.377	0.46	0.64	0.132	0.116	0.105	0.0695	0.0555	0.149	0.37	0.175	0.307	0.344	0.505
Pyrene	54200	54,500	mg/kg	0.309	0.38	0.449	0.126	0.0958	0.081	0.0587	0.0487	0.137	0.302	0.147	0.235	0.281	0.39
Benz(a)anthracene	131	142	mg/kg	0.291	0.254	0.234	0.0458	0.0417	0.0549	0.016	0.0412	0.119	0.244	0.109	0.17	0.177	0.234
Chrysene	14000	14300	mg/kg	0.275	0.292	0.192	0.0336	0.0539	0.048	0.0335	0.0298	0.0761	0.239	0.108	0.165	0.191	0.26
Benzo(b)fluoranthene	142	144	mg/kg	0.481	0.398	0.183	0.0464	0.0927	0.0621	0.033	0.0487	0.136	0.307	0.147	0.214	0.284	0.333
Benzo(k)fluoranthene	1430	1440	mg/kg	0.144	0.165	0.0696	<0.014	0.0437	0.0266	0.0163	0.0234	0.0514	0.112	0.053	0.0816	0.0967	0.14
Benzo(a)pyrene	14.3	14.4	mg/kg	0.304	0.286	0.143	0.0389	0.0741	0.0531	0.0405	0.0419	0.127	0.211	0.0951	0.127	0.127	0.243
Indeno(1,2,3-cd)pyrene	142	144	mg/kg	0.214	0.2	0.0836	0.0214	<0.023	<0.023	<0.023	<0.023	0.0278	0.135	0.0641	0.0879	0.116	0.159
Dibenzo(a,h)anthracene	14.3	14.4	mg/kg	0.0633	0.0687	0.0343	<0.023	0.045	0.0327	0.0257	0.0265	0.0752	0.0471	<0.23	0.0293	0.0382	0.0546
Benzo(g,h,i)perylene	1440	1450	mg/kg	0.264	0.237	0.101	0.028	0.0562	0.0391	0.0313	0.0282	0.0929	0.157	0.0781	0.101	0.149	0.2
Soil Organic Matter (SOM)	0	3	%														
Soil Organic Matter (SOM)			%														
Aliphatics >C5-C6	-	-	mg/kg	0.0117	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Aliphatics >C6-C8	-	-	mg/kg	0.0316	0.0158	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0153
Aliphatics >C8-C10	167,000	170,000	mg/kg	0.0573	0.0124	<0.01	0.0148	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0177	0.0102
Aliphatics >C10-C12	171,000	171,000	mg/kg	0.583	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0496	<0.01
Aliphatics >C12-C16	171,000	171,000	mg/kg	<0.010	0.8	1.88	<0.010	<0.010	0.928	<0.010	0.953	<0.010	<0.010	<0.010	<0.010	1.31	<0.010
Aliphatics >C16-C21	-	-	mg/kg	0.428	2.95	5.1	<0.010	0.567	<0.010	0.968	<0.010	0.309	<0.010	0.662	0.65	6.58	0.542
Aliphatics >C21-C35	-	-	mg/kg	21	13.2	29.5	5.07	10.6	6.72	9.51	4.35	27	1.3	1.9	11.9	21.8	13.2
Aliphatics >C35-C44	-	-	mg/kg														
TPH Aromatic >C5-7	13.10000	95,000.0000	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
TPH Aromatic >C7-8	414,000	420,000	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.123
TPH Aromatic >C8-10	58,600	64,100	mg/kg	0.0433	0.0136	<0.01	0.0103	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0165	0.0136
TPH aromatic >C10-C12	68,300	68,300	mg/kg	0.388	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.033	<0.01
TPH Aromatic >C12-C16	68400	65,600	mg/kg	<0.010	1.16	1.09	<0.010	<0.010	<0.010	1.18	<0.010	<0.010	0.45	<0.010	0.341	0.818	1.42
TPH Aromatic >C16-C21	28400	28,400	mg/kg	1.44	5.14	6.31	0.593	<0.010	<0.010	<0.010	<0.010	<0.010	0.782	<0.010	1.14	2.96	4.64
TPH Aromatic >C21-C35	28400	28,400	mg/kg	27.5	25.5	36.9	7.01	9.42	<0.010	5.73	<0.010	32.9	4.13	2.47	10.6	16.1	40.8
TPH Aromatic >C35-C44	-	-	mg/kg														
Water soluble sulphate as SO4 2:1 extract			g/l		0.205	0.175	0.0898										
Souble Sulphate 2:1			mg/kg		401	343	176										

			1000	Backfill		Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base
Llanwern	SSV Commercial	SSV Commercial		PCLC - 5		LCN-1	LCN-2	LCN-3	LCN-4	LCN-5	LCN-6	LC 007	LC 008	LCV-9	LCV-10	LCV-11	LCV 12
	1% SOM	6% SOM	Unit	2.81		9.9	4.47	1.18	65.2	1.49	3.53	17	2	2.45	1.57	1.25	2.07
Lab number																	
Asbestos			y/n														
Olfactory Score																	
Arsenic	640	640	mg/kg	108		24.9	12.9	0.865	5.07	15.1	10.9	38.4	11.6	27.4	13.9	10.4	16.8
Cadmium	230	230	mg/kg	1.42		0.808	0.661	0.457	0.571	0.591	0.646	0.55	0.397	0.0309	0.0235	0.02	<0.02
Chromium total	213000	213000	mg/kg	59.9		30	41.2	37.5	5.34	42.5	40	23	42.2	32.6	29.1	31.3	39
Chromium III	213000	213000	mg/kg														
Chromium VI	330	330	mg/kg														
Copper	3970	109000	mg/kg	44.8		16.4	13.4	9.92	7.5	11.5	11.2	32.1	9.21	11.5	9.49	9.03	12.5
Lead	6490	6490	mg/kg	46.8		43.1	34.2	27.4	6.52	31.5	30.8	27	27.5	29.2	23.7	24.8	30.1
Mercury	414	410	mg/kg	<0.14		<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	0.388	0.374	<0.14	<0.14	<0.14	<0.14
Nickel	1800	1800	mg/kg	76.6		24.7	26.8	34.6	6.98	43	29.7	34.6	34	33.3	28.9	30.8	32.2
Selenium	13000	13000	mg/kg	13.5		<1	<1	<1	1.81	<1	<1	8.19	<1	<1	<1	<1	<1
Vanadium	7530	7530	mg/kg	66.1		42.3	56.1	47	9.05	56.4	54.5	68.9	53.9	47.2	40.6	43.5	50.9
Zinc	-	-	mg/kg	246		139	129	112	14.4	126	122	85.8	106	115	95.9	102	127
Naphthalene	8180	22700	mg/kg	0.0786		<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	0.0326	<0.009	<0.009	<0.009	16.8	0.0325
Acenaphthylene	-	-	mg/kg	0.0154		<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012
Acenaphthene	109,000	106000	mg/kg	<0.008		<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	10.9	<0.008
Fluorene	66800	72100	mg/kg	0.0122		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	18.4	<0.010
Phenanthrene	-	-	mg/kg	0.126		0.0876	<0.015	<0.015	<0.015	<0.015	<0.015	0.0516	<0.015	<0.015	<0.015	116	0.065
Anthracene	536000	545000	mg/kg	0.032		0.0879	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016
Fluoranthene	73200	72700	mg/kg	0.19		0.134	<0.017	<0.017	<0.017	<0.017	<0.017	0.0377	<0.017	<0.017	<0.017	61	0.0832
Pyrene	54200	54,500	mg/kg	0.163		0.0959	<0.015	<0.015	<0.015	<0.015	<0.015	0.027	<0.015	<0.015	<0.015	32.8	0.0638
Benz(a)anthracene	131	142	mg/kg	0.139		<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	0.0302
Chrysene	14000	14300	mg/kg	0.172		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.026
Benzo(b)fluoranthene	142	144	mg/kg	0.257		0.175	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.0351
Benzo(k)fluoranthene	1430	1440	mg/kg	0.0794		0.156	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014
Benzo(a)pyrene	14.3	14.4	mg/kg	0.108		0.0848	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015	0.03
Indeno(1,2,3-cd)pyrene	142	144	mg/kg	0.101		0.0548	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018
Dibenzo(a,h)anthracene	14.3	14.4	mg/kg	0.0382		<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023
Benzo(g,h,i)perylene	1440	1450	mg/kg	0.125		0.0699	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024
Soil Organic Matter (SOM)	0	3	%														
Soil Organic Matter (SOM)			%														
Aliphatics >C5-C6	-	-	mg/kg	<0.01		0.0131	<0.01	<0.01	<0.2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0176	<0.01
Aliphatics >C6-C8	-	-	mg/kg	0.022		0.0307	0.0131	<0.01	<0.2	<0.01	0.0112	<0.01	0.0134	<0.01	<0.01	0.0243	<0.01
Aliphatics >C8-C10	167,000	170,000	mg/kg	0.0278		0.0365	0.0218	<0.01	<0.2	<0.01	0.0168	<0.01	0.0161	<0.01	<0.01	0.0216	0.0133
Aliphatics >C10-C12	171,000	171,000	mg/kg	0.0348		0.0409	0.0203	<0.01	<0.2	<0.01	0.0182	<0.01	0.0107	<0.01	<0.01	0.0432	0.02
Aliphatics >C12-C16	171,000	171,000	mg/kg	<0.010		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	2.38
Aliphatics >C16-C21	-	-	mg/kg	<0.010		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.769	<0.010	<0.010	<0.010	<0.010	4.44
Aliphatics >C21-C35	-	-	mg/kg	<0.010		5.25	4.25	<0.010	11.8	<0.010	3.81	8.84	<0.010	<0.010	<0.010	<0.010	6.36
Aliphatics >C35-C44	-	-	mg/kg			-											
TPH Aromatic >C5-7	13.10000	95,000.0000	mg/kg	<0.01		<0.01	<0.01	<0.01	<0.2	<0.01	<0.01	0.0403	<0.01	<0.01	<0.01	<0.01	<0.01
TPH Aromatic >C7-8	414,000	420,000	mg/kg	<0.01		<0.01	<0.01	<0.01	<0.2	<0.01	<0.01	0.0155	<0.01	<0.01	<0.01	<0.01	<0.01
TPH Aromatic >C8-10	58,600	64,100	mg/kg	0.022		0.0263	0.0145	<0.01	<0.2	<0.01	0.0112	<0.01	0.0107	<0.01	<0.01	0.0162	<0.01
TPH aromatic >C10-C12	68,300	68,300	mg/kg	0.0232		0.0277	0.0145	<0.01	<0.2	<0.01	0.0126	<0.01	<0.01	<0.01	<0.01	0.0284	0.0133
TPH Aromatic >C12-C16	68400	65,600	mg/kg	<0.010		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.163	<0.010	<0.010	<0.010	<0.010	<0.010
TPH Aromatic >C16-C21	28400	28,400	mg/kg	<0.010		1.53	0.358	<0.010	8.3	<0.010	1.17	2.78	<0.010	<0.010	<0.010	<0.010	3.65
TPH Aromatic >C21-C35	28400	28,400	mg/kg	<0.010		40.8	16.7	<0.010	352	4.93	16.5	19.2	<0.010	<0.010	<0.010	<0.010	8.93
TPH Aromatic >C35-C44	-	-	mg/kg														
Water soluble sulphate as SO4 2:1 extract			g/l														0.157
Souble Sulphate 2:1			mg/kg														313

			1000	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base	Base
Llanwern	SSV Commercial 1% SOM	SSV Commercial 6% SOM		LCV 13	LCV 14	LCV 15	LCV 16	LCV-17	LCV-18	LCV-19	LCV-20	LCV-21	LCV - 22	LCV - 23	LCV - 24	LCV - 25	LCV - 26	LCV - 27	
			Unit	2.1	4.55	0.821	1.93	4.74	2.43	1.97	4.17	7.76	5.31	8.69	2.88	1.55	2.07	1.6	
Lab number																			
Asbestos			y/n																
Olfactory Score																			
Arsenic	640	640	mg/kg	15.8	16.4	15.3	31.3	16.4	13.1	12.1	14.4	17.1	15.6	19.2	12.1	19.2	13.1	9.13	
Cadmium	230	230	mg/kg	<0.02	0.309	<0.02	<0.02	0.235	0.231	0.142	0.355	0.266	0.273	0.367	<0.02	<0.02	<0.02	<0.02	
Chromium total	213000	213000	mg/kg	43.4	38.4	34.6	24	48.1	40.7	37.6	39.6	41	35.7	38.5	40.8	41.7	38.7	44.8	
Chromium III	213000	213000	mg/kg																
Chromium VI	330	330	mg/kg																
Copper	3970	109000	mg/kg	14.6	15	8.39	34	13.5	10.9	10.8	15	15.1	11.9	14.7	11.2	10.5	10.2	14.7	
Lead	6490	6490	mg/kg	29.4	69.7	25.8	32.4	36.4	31.6	28.5	35.9	41.8	40.6	51	35.1	31.8	32	38.2	
Mercury	414	410	mg/kg	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	
Nickel	1800	1800	mg/kg	29	30	33.7	29.1	24.3	32.3	31.7	33.6	27.5	21.7	25.4	30.6	35	29.5	41.3	
Selenium	13000	13000	mg/kg	1.4	2.41	<1	4.41	<1	2.1	<1	1.62	<1	1.2	2.24	1.44	<1	1.08	<1	
Vanadium	7530	7530	mg/kg	65.9	55.5	48.1	59.4	62.7	57.6	51.1	55.1	57.7	52.8	56.6	57	61.5	55.6	63.5	
Zinc	-	-	mg/kg	108	175	108	99.1	125	128	111	141	134	120	154	121	107	119	130	
Naphthalene	8180	22700	mg/kg	0.029	0.0131	<0.009		0.0197	<.009	0.0179	0.0301	0.0147	0.0158	0.0156	<0.009	0.059	<0.009	<0.009	
Acenaphthylene	-	-	mg/kg	<0.012	<0.012	<0.012		<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	
Acenaphthene	109,000	106000	mg/kg	<0.008	<0.008	<0.008		<0.008	<0.008	<0.008	0.0137	<0.008	<0.008	<0.008	<0.008	0.0592	<0.008	<0.008	
Fluorene	66800	72100	mg/kg	0.0147	<0.010	<0.010		<0.01	<0.01	<0.01	0.0347	<0.01	<0.01	<0.01	<0.01	0.0455	<0.01	<0.01	
Phenanthrene	-	-	mg/kg	0.0951	0.0542	<0.015		0.0632	<0.015	0.033	0.152	0.0568	0.05	0.0249	<0.015	0.126	<0.015	<0.015	
Anthracene	536000	545000	mg/kg	<0.016	<0.016	<0.016		<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	<0.016	
Fluoranthene	73200	72700	mg/kg	0.101	0.0497	<0.017		0.0885	<0.017	0.0318	0.087	0.0709	0.0537	<0.017	<0.017	0.06	<0.017	<0.017	
Pyrene	54200	54,500	mg/kg	0.0767	0.0376	<0.015		0.0687	<0.015	0.0259	0.0599	0.0568	0.0414	<0.015	<0.015	0.0462	<0.015	<0.015	
Benz(a)anthracene	131	142	mg/kg	0.034	<0.014	<0.014		0.0286	<0.014	<0.014	0.041	0.041	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	
Chrysene	14000	14300	mg/kg	0.0381	0.017	<0.010		0.0369	<0.01	<0.01	0.0381	0.0385	0.0193	<0.01	<0.01	0.0148	<0.01	<0.01	
Benzo(b)fluoranthene	142	144	mg/kg	0.0347	0.0236	<0.015		0.0536	<0.015	<0.015	0.0802	0.0576	0.0454	<0.015	<0.015	<0.015	<0.015	<0.015	
Benzo(k)fluoranthene	1430	1440	mg/kg	<0.014	<0.014	<0.014		<0.014	<0.014	<0.014	0.0274	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	<0.014	
Benzo(a)pyrene	14.3	14.4	mg/kg	0.0339	<0.015	<0.015		0.0457	<0.015	<0.015	0.0398	0.0426	0.0237	<0.015	<0.015	<0.015	<0.015	<0.015	
Indeno(1,2,3-cd)pyrene	142	144	mg/kg	<0.018	<0.018	<0.018		0.028	<0.018	<0.018	0.0306	0.0322	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018	
Dibenzo(a,h)anthracene	14.3	14.4	mg/kg	<0.023	<0.023	<0.023		<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	
Benzo(g,h,i)perylene	1440	1450	mg/kg	0.0347	<0.024	<0.024		0.0609	<0.024	<0.024	0.0449	0.0551	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	
Soil Organic Matter (SOM)	0	3	%																
Soil Organic Matter (SOM)			%																
Aliphatics >C5-C6	-	-	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.014	0.0149	<0.01	<0.01	<0.01	<0.01	
Aliphatics >C6-C8	-	-	mg/kg	0.0134	0.0195	<0.01	<0.01	0.0136	0.0196	0.0157	0.0227	0.0179	0.0224	0.0298	<0.01	0.0106	<0.01	<0.01	
Aliphatics >C8-C10	167,000	170,000	mg/kg	0.0214	0.0361	<0.01	<0.01	0.0302	0.0322	0.0236	0.027	0.0283	0.0336	0.0924	<0.01	0.0146	<0.01	<0.01	
Aliphatics >C10-C12	171,000	171,000	mg/kg	0.0147	0.0278	<0.01	<0.01	0.0151	0.0238	0.0223	0.0554	0.0283	0.0448	0.279	0.0128	0.0173	<0.01	<0.01	
Aliphatics >C12-C16	171,000	171,000	mg/kg	<0.010	<0.010	<0.010	33.3	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	7.85	<0.010	<0.010	
Aliphatics >C16-C21	-	-	mg/kg	<0.010	0.324	<0.010	242	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	8.8	<0.010	<0.010	
Aliphatics >C21-C35	-	-	mg/kg	<0.010	3.44	<0.010	572	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	6.4	<0.010	4.23	8.12	<0.010	
Aliphatics >C35-C44	-	-	mg/kg																
TPH Aromatic >C5-7	13.10000	95,000.0000	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
TPH Aromatic >C7-8	414,000	420,000	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
TPH Aromatic >C8-10	58,600	64,100	mg/kg	0.0147	0.0236	<0.01	<0.01	0.0211	0.0266	0.017	0.0213	0.0209	0.0252	0.0611	<0.01	0.0106	<0.01	<0.01	
TPH aromatic >C10-C12	68,300	68,300	mg/kg	0.0107	0.0195	<0.01	<0.01	<0.01	0.0168	0.0144	0.0369	0.0194	0.0294	0.186	<0.01	0.0106	<0.01	<0.01	
TPH Aromatic >C12-C16	68400	65,600	mg/kg	<0.010	<0.010	<0.010	11.7	<0.010	<0.010	<0.010	<0.010	<0.010	1.25	1.4	<0.010	2.29	<0.010	<0.010	
TPH Aromatic >C16-C21	28400	28,400	mg/kg	<0.010	1.61	<0.010	168	<0.010	<0.010	<0.010	<0.010	<0.010	1.7	<0.010	0.817	2.6	<0.010	<0.010	
TPH Aromatic >C21-C35	28400	28,400	mg/kg	8.21	33.4	<0.010	582	7.81	2.98	4.96	9.43	20.2	40.9	58.4	17.8	2.76	<0.010	<0.010	
TPH Aromatic >C35-C44	-	-	mg/kg																
Water soluble sulphate as SO4 2:1 extract			g/l	0.42	0.0054	0.027	0.201												
Souble Sulphate 2:1			mg/kq	855	11	54.4	401												

			1000	Base	Base	Base	Base	Base
Llanwern	SSV Commerical	SSV Commercial		LCU-28	LCU-29	LCV - 30	LCV - 31	LCV - 32
	1% SOM	6% SOM	Unit	5.71	5.53	4.36	4.15	2.22
Lab number								
Asbestos			y/n					
Olfactory Score								
Arsenic	640	640	mg/kg	17.1	17.6	17.1	17	13.8
Cadmium	230	230	mg/kg	0.468	0.459	0.522	0.417	0.337
Chromium total	213000	213000	mg/kg	41.6	37.6	36.8	28.2	44
Chromium III	213000	213000	mg/kg					
Chromium VI	330	330	mg/kg					
Copper	3970	109000	mg/kg	14.9	13.2	19.3	15.6	12.5
Lead	6490	6490	mg/kg	51.2	41.5	43	38	35
Mercury	414	410	mg/kg	<0.14	<0.14	<0.14	<0.14	<0.14
Nickel	1800	1800	mg/kg	25.8	25	21.4	23.9	33.9
Selenium	13000	13000	mg/kg	<1	<1	<1	<1	<1
Vanadium	7530	7530	mg/kg	58.6	53.4	50	38.2	60.3
Zinc	-	-	mg/kg	161	140	136	128	149
Naphthalene	8180	22700	mg/kg	0.0155	<9	0.0821	0.0382	0.0197
Acenaphthylene	-	-	mg/kg	<0.012	<0.012	0.0204	<12	<12
Acenaphthene	109,000	106000	mg/kg	<0.008	<0.008	0.0397	0.0257	<8
Fluorene	66800	72100	mg/kg	<0.010	<0.010	0.0516	0.0261	<10
Phenanthrene	-	-	mg/kg	0.0411	0.0462	0.33	0.144	0.0512
Anthracene	536000	545000	mg/kg	<0.016	<0.016	0.0758	0.0355	<16
Fluoranthene	73200	72700	mg/kg	0.0482	0.057	0.399	0.18	0.032
Pyrene	54200	54,500	mg/kg	0.0359	0.0442	0.297	0.136	0.0246
Benz(a)anthracene	131	142	mg/kg	0.0349	<0.014	0.213	0.0783	<14
Chrysene	14000	14300	mg/kg	0.0251	0.026	0.23	0.0865	0.0185
Benzo(b)fluoranthene	142	144	mg/kg	0.052	0.0394	0.271	0.0997	0.0221
Benzo(k)fluoranthene	1430	1440	mg/kg	<0.014	<0.014	0.0962	0.0312	<14
Benzo(a)pyrene	14,3	14.4	mg/kg	<0.015	0.0272	0.186	0.052	<15
Indeno(1,2,3-cd)pyrene	142	144	mg/kg	<0.018	<0.018	0.124	0.0347	<18
Dibenzo(a,h)anthracene	14.3	14.4	mg/kg	<0.023	<0.023	0.0408	<23	<23
Benzo(g,h,i)perylene	1440	1450	mg/kg	<0.024	<0.024	0.157	0.0548	0.0404
Soil Organic Matter (SOM)	0	3	%					
Soil Organic Matter (SOM)			%					
Aliphatics >C5-C6	-	-	mg/kg	<10	<10	<40	<40	<40
Aliphatics >C6-C8	-	-	mg/kg	<10	0.0149	<40	<40	<40
Aliphatics >C8-C10	167,000	170,000	mg/kg	0.0298	0.0238	<40	<40	<40
Aliphatics >C10-C12	171,000	171,000	mg/kg	0.0119	0.0238	<40	<40	<40
Aliphatics >C12-C16	171,000	171,000	mg/kg	<0.01	<0.01	3.4	<100	<100
Aliphatics >C16-C21	-	-	mg/kg	<0.01	0.855	6.07	<100	<100
Aliphatics >C21-C35	-	-	mg/kg	2.43	4.09	23.8	0.986	0.77
Aliphatics >C35-C44	-	-	mg/kg					
TPH Aromatic >C5-7	13.10000	95.000.0000	mg/kg	<10	<10	<40	<40	<40
TPH Aromatic >C7-8	414.000	420,000	mg/kg	<10	<10	<40	<40	<40
TPH Aromatic >C8-10	58,600	64,100	mg/kg	0.0194	0.0149	<40	<40	<40
TPH aromatic >C10-C12	68,300	68,300	mg/kg	<10	0.0164	<40	<40	<40
TPH Aromatic >C12-C16	68400	65,600	mg/kg	<0.01	<0.01	1.85	<100	<100
TPH Aromatic >C16-C21	28400	28,400	mg/kg	<0.01	<0.01	4.05	1.07	<100
TPH Aromatic >C21-C35	28400	28,400	mg/kg	29.5	26.6	34.7	13.7	2.82
TPH Aromatic >C35-C44	-	-	mg/kg					
Water soluble sulphate as SO4 2:1 extract			g/l					
Souble Sulphate 2:1			mg/kg					

Appendix B. Reclamation Works Photosheet



Photograph 1: Commencement of works in Local Centre north January 2014.



Photograph 2: Typical Made Ground across the Local Centre consisting of Slag (Green and grey strata) and Iron Ore (Red strata)



Photograph 3: Exposure of remnant structures (note Persimmon compound in back ground on the Local Centre south area.



Photograph 4: Backfill with chemically suitable material



Photograph 5: Local Centre North backfilled



Photograph 6: Creation of platform to allow Persimmon to move compound from Local Centre south to Local Centre north.



Photograph 7: Exposure of remnant structures on Local Centre south.



Photograph 8: Base of excavation of Local Centre south.



Photograph 9: Backfill of local centre south



Photograph 10: Local Centre south final platform. (Note Persimmon compound now located on Local Centre north)

Howel Morris
Atkins Ltd

Email Howel.Morris@Atkinsglobal.com
Telephone 0121 483 5000
Direct telephone 0121 483 5880

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